One Hundred Eighth Congress
U.S. House of Representatives
Select Committee on Homeland Security
Washington, DC 20515



October 15, 2004

The Honorable Tom Ridge
Secretary
Department of Homeland Security
Washington, D. C.

Dear Mr. Secretary,

I am writing as part of my ongoing investigation into the development of the US-VISIT program by the Department of Homeland Security and new information that raises serious doubts about the accuracy of the system's check of a biometric watch-list of suspected terrorists.

My prior letters to you have discussed:

- The Department's decision to build US-VISIT as a stand-alone system that is not fully interoperable with key border security databases operated by the Department of Justice and the Department of State.

- The Department's decision to pre-maturely stop the work of a statutorily authorized oversight board on border security after it called for an independent review of US-VISIT after the system's first six months of operation.

- The Department's decision to ignore a formal warning from the DHS Office of Inspector General about flaws in the development of US-VISIT that could jeopardize government-wide efforts to improve information-sharing among border security agencies.[1]

[1] (1) See: Enhanced Immigration and Border Security Act of 2002, Title II, Section 202. On DHS decision to post-pone work on US-VISIT reengineering and interoperability see: (1) US-VISIT Request for Proposals, Nov. 28, 2003; (2) US-VISIT Expenditure Plan for FY 2004, Nov. 2003; (3) Memorandum from US-VISIT Program Director James A. Williams to Inspector General Clark Kent Ervin, dated March 10, 2004 in Reengineering Report, Appendix 6; (4) and GAO report "Homeland Security: Risks Facing Key Border and Transportation Security Program Need to Be Addressed. (GAO-03-1083)

Today, I am inquiring about new information regarding the Department's decision in April, 2003 to build US-VISIT with a flawed two-fingerprint scanning system. On Sept. 30, a subcommittee of the House Select Committee on Homeland Security, heard testimony from a respected analyst of terrorism vulnerabilities at Stanford University that this two-fingerprint system is no more than 53 percent effective in matching fingerprints with poor image quality against the government's biometric terrorist watch-list.

According to the Stanford experts, this defect could be corrected by changing to a ten-fingerprint system. This is especially concerning because, prior to the deployment of US-VISIT, the Department of Homeland Security was warned on numerous occasions by the government's top biometric scientists from the National Institute of Standards and Technology (NIST) that the two-fingerprint system could not accurately perform watchlist searches and the ten-fingerprint system was far preferable. Nonetheless, the Department disregarded this advice and built US-VISIT using a two-fingerprint biometric identifier.

**Stanford Study Shows US-VISIT's "Detection Probability" Is Only 53 Percent For Persons With Low Fingerprint Image Quality**

Using publicly available data on the performance of US-VISIT, Professor Lawrence M. Wein and a colleague calculated the probability that US-VISIT could detect a suspected terrorist who used abrasive chemicals or other means to alter or deface their fingerprints. The tests showed that US-VISIT "has only a 53 percent chance of detecting a terrorist at U.S. ports of entry" who used this simple countermeasure, Wein testified before the House Subcommittee on Infrastructure and Border Security, a probability of detection that Wein equated to a coin toss.

The Stanford study calculated the risks that arise from two known performance issues in the US-VISIT system: the limited power the two-fingerprint process to find matches in a large database and the uneven quality of fingerprint images stored in the US-VISIT database, especially those needed to intercept suspected terrorists. "The premise of our study is that terrorist organizations, such as Al Qaida, will exploit this vulnerability by choosing U.S.-bound terrorists who have inherently poor image quality, such as worn out fingers, or deliberately reduced image quality," Wein said.

"On the surface, the biometric identification of the US-VISIT programs appears to be highly effective," Wein testified, noting that a recent NIST study pegged the overall accuracy rating of US-VISIT searches at 96 percent.[2] However, he said NIST reports also show that the two-fingerprint software has "a very difficult time in accurately matching images that have poor quality." [3]

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[2] May, 2004 "Matching Performance for the US-VISIT IDENT System Using Flat Fingerprints (NISTIR 7110) " (NIST Matching Performance Report)

[3] NIST Matching Performance Report: "This test has shown that fingerprint image quality is critical for the accurate matching of fingerprints." Tests of existing IDENT one-to-many matching system show best

NIST tests have confirmed US-VISIT's ability to accurately verify the identity of a law-abiding visa holder whose fingerprints are already stored in US-VISIT. But in June a NIST report summarized tests that showed the accuracy of a two-fingerprint system falls sharply when searching for a match among stored images of poor quality. "The variables that had the largest effect on system accuracy were the number of fingers used and fingerprint quality," the NIST report said. "Additional fingers greatly improve accuracy. Poor quality fingerprints greatly reduce accuracy."[4]

In his testimony, Wein contended that the inherent limitations of a two-fingerprint biometric system are well-known, noting that NIST has published images of poor quality fingerprints on its website. "Part of the reason we're putting this program in place is to stop terrorists from coming into the country," he testified. "It would be naive to think that these people are not trying to defeat the system."

**NIST Official Says Stanford Study Probably Understates Security Problem**

On Sept. 30, 2004, investigators from the Minority Staff interviewed the NIST senior scientist who oversees the agency's evaluations of biometric matching software and equipment pursuant to mandates in the USA-PATRIOT Act and the Enhanced Immigration and Border Security Act. The NIST scientist said the analysis in the Stanford study "is on the right track" but may actually understate the problem. He said the study's 53 percent accuracy estimate is probably conservative, because the Stanford study was based on NIST data about the general quality of fingerprint images in US-VISIT. While US-VISIT holds millions of good quality fingerprint images collected under controlled conditions at a U.S. consulates or ports-of-entry, the scientist said the terrorist watch-list is mostly made up of "low quality" fingerprints.

During his testimony, Wein said he agreed that the study's findings probably understate the problem. "The test databases they (NIST) use in some sense are much cleaner than the true operational databases that we're using to try to catch terrorists," he said. "And indeed, there's going to be lower image quality in general on the real databases than there are on these test databases. Obviously, at this point in time, they (NIST) are not sharing those numbers with me, so I can't say what the magnitude of that is. But I would agree with their assessment that my numbers are conservative and are painting, if anything, an optimistic view of the current operation."

However, Wein said his study also showed that the government could raise the "detection probability" of intercepting an al Qaeda member with altered fingerprints to 95 percent by installing a ten-fingerprint scanning process in US-VISIT. "[A] lthough

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quality images produce a True Accept Rate (TAR) of 99 percent; worst quality images produce a TAR of 53 percent.

[4] June, 2004, "Fingerprint Vendor Technology Evaluation 2003: Summary of Results and Analysis Report" page 71

[8] Nov. 13, 2002, "NIST Standards for Biometrics Accuracy, Tamper Resistance and Interoperability"

switching from a two fingerprint to a ten fingerprint system may be costly and certainly would be disruptive; there is simply no excuse for a $10 billion program not to achieve a 95 percent performance level," Wein said in his testimony, "particularly given the potentially grave consequences of allowing....a terrorist to cross the border."

**NIST and White House Had Previously Recommended a Ten-Print System**

Under provisions of the USA-PATRIOT Act and the Enhanced Immigration and Border Security Act, NIST was authorized to conduct tests for the purpose of certifying the accuracy of biometric screening in the entry-exit system and setting federal technology standards for the government use of biometric systems. In November, 2002, over a year before the roll-out of the two-print, US-VISIT system, NIST published a report that recommended using a ten-fingerprint system for conducting entry-exit background searches to detect "foreign nationals identified as having a criminal record or being on a watch list."[8] The NIST report also said: "The use of more fingers not only increases system accuracy, but dramatically reduces the size and cost of the necessary hardware... as well as the number of, and operational costs associated with, false readings."

A January, 2003 study commissioned by the Executive Office of the President of the United States, Office of Science and Technology Policy, reached the same conclusion, saying "For maximum scalability, accuracy and ease of acquisition, flat impressions...of all ten fingerprints should be acquired from each individual."[9] The White House study warned that trying to do watch-list searches with less than ten-fingerprints would be futile.

"Watch-list searches are extremely difficult due to the marginal quality of most watch-list enrollments," the White House study said, "....(and) "recent test results suggest that watchlist searches may be an even more challenging application than had been assumed, such that the likelihood of detecting a watch-listed individual is minute relative to the likelihood of misidentifying a non-watch-listed individual."

Based on such expert advice, the Bush Administration submitted a Report to the Congress that outlined a plan for use of a ten-fingerprint system that could easily search the Justice Department's Integrated Automated Fingerprint Identification System (IAFIS).[10] Extensive tests had shown that ten-fingerprint systems can accurately find matches even among poor quality images.

**DHS Disregards Expert Advice and Builds A Two-Fingerprint System**

The Department decided, however, to equip US-VISIT with a two-fingerprint system known as IDENT, and despite the known limitations with this system's ability to

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[9] Jan. 13, 2003 "Biometric Technologies in Visa Issuance and Entry/Exit Systems," by the International Biometrics Group.

[10] January, 2003, "Report to the Congress: Use of Technology Standards and Interoperable Databases With Machine Readable, Tamper Resistant Travel Documents".

conduct accurate watch-list searches, Undersecretary of Border and Transportation Security Asa Hutchinson, promised the biometrics in US-VISIT would "stop terrorists in their tracks."

During the summer of 2003, House and Senate appropriators signaled their unease with DHS's decision. A June 23, 2003 report by the House Appropriations Subcommittee on Homeland Security included a warning that was later adopted by the Conference Report:

> "The integrity and effective use of biometrics is essential to the success of the US-VISIT program. While the Committee understands the Secretary's need to aggressively begin implementation of US-VISIT, actions taken within this first phase must not preclude DHS from developing a biometric infrastructure and automated fingerprint identification system (AFIS) that supports NIST biometric standards, is interoperable with law enforcement AFIS systems, and that ensures timely and efficient search responses."

**Department Publicly Emphasizes Checks of Biometric Terrorist Watch-list**

On Jan. 5, 2004, the day the US-VISIT fingerprint checks began at 115 airports and 14 seaports, the Department noted that the fingerprints in US-VISIT will "allow for improved biometrics-based searches of watch-lists, including law enforcement and intelligence databases containing information on known and suspected terrorists." During a hearing before the Select Committee on Jan. 28, 2004, Undersecretary Hutchinson said: "In just a few short weeks the first release of US-VISIT has improved the security of our citizens and visitors."

In late February of 2004, NIST informed government officials of new test results that confirmed the tendency of the two fingerprint system to generate increasing numbers of false returns as the US-VISIT database grew, a finding that reinforced earlier NIST warnings about the specter of an eventual crash.[11] Moving to a ten-fingerprint system would resolve this problem, the NIST study confirmed. On March 11, 2004, Undersecretary Hutchinson appeared as a witness before the House Appropriations Subcommittee on Homeland Security and said:

> I think we made the right decision this year when we did not have any requirement for a biometric check, to go ahead and at least have this capability… We had to use the two-print basis for the initial phase of US-VISIT; because that was the only thing we could do to get the security benefit that we needed. But ultimately we want to move to an expanded

[11] NIST report: "Studies of Plain-to-Rolled Fingerprint Matching Using the NIST Algorithmic Test Bed (ATB) "Using plain rather than rolled fingerprints in 10-finger or 8-finger matching can be expected to result in a three-fold reduction in throughput. Reducing the number of fingers from ten to two can be expected to reduce throughput by a factor of ten or more." The term "throughput" refers to the amount of data from the fingerprint image that is available to the biometric software for matching against stored prints.

eight-print basis for US-VISIT. ....We don't have a specific time frame for that, but we know that we'll ultimately have to gravitate to that.[12]

Despite these reports and statements, since then, the Department has continued to encourage the perception that US-VISIT does accurate checks of the terrorist watch-list. After the first increment of US-VISIT was fully deployed in March, 2004, a Department witness testified at a congressional hearing that "We are seeing that we can accomplish what we set out to do: keep out terrorists..."[13] A regulatory notice on US-VISIT published August 31, 2004 claimed that "DHS currently utilizes the two-finger scan to determine whether the alien is identified in any watch-lists of lookout databases."[14]

**New Disclosures On US-VISIT Flaws Demonstrates Need for Robust Congressional Oversight**

Undersecretary Hutchinson has said that the Department decided to use IDENT's two-fingerprint process in US-VISIT because it had no other alternative that would provide a comparable security benefit. But the findings of Wein and his colleague, and the recent statements by NIST officials about the poor quality of many fingerprint images on the terrorist watchlist, suggest that the security benefit of the two-fingerprint system has been greatly overstated. Furthermore, the January, 2003 Report to the Congress, which outlined a plan for using a ten-fingerprint system, undercuts the suggestion that the Department had no alternative to using a two-fingerprint system.

I understand your desire to deploy biometric screening at our borders as quickly as possible and the benefits that US-VISIT's provides in verifying that a person's biometrics matches his or her travel documents, a function US-VISIT performs well. But more than three years after the 9/11 attacks, we have invested more than $700 million in an entry-exit system that cannot reliably do what the Department so often said it would: Use a biometric watch-list to keep known terrorists out of the country.

I am deeply troubled that the Department was not more forthcoming with Congress and with the public about the limitations of the watchlist check. Indeed, the comment of Assistant Secretary Verdery before the Select Committee that the 10-print system would only provide a "marginal gain" in security, even after he had been advised of the Stanford study, suggests that Department officials may still be in denial about the effectiveness of US-VISIT. In light of the Stanford study, and recent statements by NIST officials, it is clear to me that Congress must provide more rigorous oversight over for a

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[12] May, 2004, NIST report "Matching Performance for the US-VISIT IDENT System Using Flat Fingerprints (NISTIR 7110) said "The false accept rate (FAR) using index fingers is linearly increasing with database size."

[13] March 18, 2004, Prepared Statement of US-VISIT Program Deputy Director Robert Mocny, before the House Judiciary Committee, Subcommittee on Immigration, Border Security and Claims.

[14] Federal Register Notice, Aug. 31, 2004, Vol. 69, No. 168 "United States Visitor and Immigrant Status Indicator Technology Program ("US-VISIT); Authority to Collect Biometric Data from Additional Travelers and Expansion to the 50 Most Highly Trafficked Land Border Ports of Entry; Interim Rule

program in the Department that is crucial to protecting the lives of our fellow citizens and is being built at a tremendous cost to the taxpayer.

In that regard, I have two requests. First, I would ask that you direct the Department's Office of General Counsel to secure and preserve all documents and electronic communication created by officials at the Department or by contractors working for the Department that relate to the decision to use a two-fingerprint system in US-VISIT, or involve communications with officials at NIST. Second, I would ask that you direct the relevant Department officials to provide to the Select Committee the documents set forth in the attached list. These documents were requested in my previous letters to you on US-VISIT of August 12, 2004, August 17, 2004 and September 13, 2004. I am requesting that these documents be provided by no later than October 29, 2004.

Sincerely,

Jim Turner
Ranking Minority Member

cc: Chairman Christopher Cox

(Attachment 1)

Consolidated Document Request No. 1
Department of Homeland Security
US-VISIT and IDENT[1]

1. Any and all documents of the Department of Homeland Security (DHS) relating to the decision to abandon previous Administration plans to build a fully interoperable border security system (Atlas/Chimera) and instead build the US-VISIT system based on the antiquated, and consistently criticized legacy INS database and biometric systems. Such documents should include memorandums, studies, emails, correspondence and reports between Department of Homeland Security officials and between such officials and other agencies.

2. The Department of Homeland Security's current plan to achieve database integration and interoperability across all key border security and law enforcement systems, including fully interoperability with the FBI's entire Integrated Automated Fingerprint Identification System (IAFIS) fingerprint database, full State Department visa applicant files, and the 50 databases listed in the 2003 DMIA Taskforce Report. The plan should contain specific benchmarks and projected dates by which such benchmarks should be achieved.

3. The Department of Homeland Security's current cost estimate for achieving the benchmarks set forth in paragraph 2.

4. Any and all DHS documents that discuss or refer to the concerns raised by the August, 28, 2003 memo from the DHS Inspector General regarding the need to re-engineer US-VISIT and other border security systems. This request includes all memorandums, studies, emails, correspondence and reports created or received by personnel assigned to the US-VISIT Program Office, the DHS Office of the Secretary or the DHS Directorate of Border and Transportation Security.

5. Any and all documents created or received by personnel in the US-VISIT Program Office, by contractors assigned to the US-VISIT program, by the

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[1] (1) August 12, 2004 Letter Rep. Jim Turner to DHS Secretary Tom Ridge http://www.house.gov/hsc/democrats/pdf/press/ridge081204.pdf (2) August 12, 2004 Letter Rep. Jim Turner to DHS Secretary Tom Ridge http://www.house.gov/hsc/democrats/pdf/hsc_docs/LetterDMIA_08_17_04.pdf (3) Sept. 13, 2004 Letter Rep. Jim Turner to DHS Secretary Tom Ridge http://www.house.gov/hsc/democrats/pdf/hsc_docs/Letter9_13_04.pdf

DHS Office of the Secretary or by the DHS Directorate of Border and Transportation Security that describes or refers to planned or on-going efforts to reengineer business processes, operations or technology at any DHS agencies to facilitate interoperability and information-sharing between US-VISIT and other major border security systems.

6. Any and all documents created by DHS personnel or DHS contractors working on the Automated Customs Environment (ACE) project, the Computer Assisted Passenger Processing System II project, or the Deepwater Coast Guard Modernization project that describe or refer to efforts to reengineer those systems to ensure their interoperability with US-VISIT.

7. All documents prepared by Mitre Corp. in 2003 at the direction of the US-VISIT Program Office, including any documents that provided a long term vision of border management and updated costs estimates for US-VISIT; and all "Statements of Work" or assignments provided to Mitre in connection to US-VISIT.

8. All documents prepared by Bearing Point, LLP or any other DHS contractor in 2002 or 2003 that presented the "business case" for a developing an entry-exit system or US-VISIT; and all "Statements of Work" or assignments provided to Bearing Point in connection with US-VISIT.

9. All Exhibit 300's prepared in connection with budget requests for US-VISIT or for any components of US-VISIT that were submitted to the Office of Management and Budget in 2002, 2003 or 2004.

10. Final bid proposals submitted to DHS by Lockheed-Martin Corp., Computer Sciences Corp., and Accenture, LLP in response to a Nov. 28, 2003 Request for Proposal seeking a prime contractor for US-VISIT, including all supporting attachments to the bid proposals including all descriptions of each bidder's "end-vision" for US-VISIT.

11. All documents that reflect the DHS "end vision" or plans for future increments for US-VISIT drawn from the submissions of Accenture, Lockheed-Martin and Computer Sciences Corp. that DHS has adopted and intends to implement, whether in whole or in part.